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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/635,666	08/07/2003	Masayuki Fujita	21581-00258-US2	9995

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EXAMINER
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MCCLENDON, SANZA L

ART UNIT	PAPER NUMBER
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1711

DATE MAILED: 11/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/635,666

Applicant(s)

FUJITA ET AL.

Examiner

Sanza L. McClendon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-79 is/are pending in the application.
- 4a) Of the above claim(s) 1-20 and 46-79 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 21-25, 31-36 and 45 is/are rejected.
- 7) ☒ Claim(s) 26-30 and 37-45 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☒ Certified copies of the priority documents have been received in Application No. 09/807,038.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 8/03.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

*Election/Restrictions*

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

- Group I, claim(s) 1-10, drawn to a curable composition comprising (A1) a vinyl polymer having at least one crosslinkable silyl group of the general formula  $-\text{[Si (R}^1\text{)}_{2-b} \text{(Y)}_{bO}\text{]}_m\text{-Si (R}^2\text{)}_{3-a} \text{(Y)}_a$  and (B) a photocurable substance.
- Group II, claim(s) 11-20, drawn to (A2) a vinyl polymer having at least one crosslinkable silyl group of the general formula  $-\text{[Si (R}^1\text{)}_{2-b} \text{(Y)}_{bO}\text{]}_m\text{-Si (R}^2\text{)}_{3-a} \text{(Y)}_a$  and (C) an air oxidation-curable substance.
- Group III, claim(s) 21-45, drawn to (A3) a vinyl polymer having at least one crosslinkable silyl group of the general formula  $-\text{[Si (R}^1\text{)}_{2-b} \text{(Y)}_{bO}\text{]}_m\text{-Si (R}^2\text{)}_{3-a} \text{(Y)}_a$  and (D) a high molecular weight plasticizer having a number average molecular weight of 500 or over.
- Group IV, claim(s) 46-63, drawn to (A4) a vinyl polymer having not less than 1.1 of crosslinking silyl group of the general formula  $-\text{[Si (R}^1\text{)}_{2-b} \text{(Y)}_{bO}\text{]}_m\text{-Si (R}^2\text{)}_{3-a} \text{(Y)}_a$  and (E) a reactive plasticizer comprising a vinyl polymer having not more than one crosslinking silyl group of general formula (1) on the average per molecule.
- Group V, claim(s) 64-79, drawn to (A5) a vinyl polymer having at least one crosslinkable silyl group of the general formula (1) on average per molecule the main chain of which polymer has been obtained by a living

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polymerization technique;  $-\text{[Si (R}^1\text{)}_{2-b} \text{(Y)}_{bO}\text{]}_m\text{-Si (R}^2\text{)}_{3-a} \text{(Y)}_a$  (1) and (F) a compound (I) having one silanol group per molecule and/or a compound (II) capable of reacting with moisture to give a compound having one silanol group per molecule.

The inventions listed as Groups I-V do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The vinyl polymer having at least one crosslinkable silyl group of the general formula  $-\text{[Si (R}^1\text{)}_{2-b} \text{(Y)}_{bO}\text{]}_m\text{-Si (R}^2\text{)}_{3-a} \text{(Y)}_a$  is well known in the prior art, such as WO 99/05216 and US 6,407,146 both to Fujita et al.

2. During a telephone conversation with Mr. Burton Amernick on September 27, 2004 a provisional election was made with traverse to prosecute the invention of Group III, claims 21-45. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-20 and 46-79 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

3. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

*Claim Rejections - 35 USC § 102/35 USC § 103*

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 21-25, 31-36 and 45 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Fujitia (WO 99056216).

Note Us 6,407,146 B1 to Fujita et al is being used as the English language equivalent to WO 99/05216.

Fujita et al teaches curable compositions comprises a vinyl polymer having at least one crosslinkable silyl groups represented by the formula  $-\text{Si}(\text{R}^1)_{2-b}(\text{Y})_{b0}]_m-\text{Si}(\text{R}^2)_{3-a}(\text{Y})_a$  and an epoxy resin or a polyether polymer having at least one crosslinkable silyl group. The vinyl polymer can be a methacrylic or acrylic polymer. This anticipates claims 23-24. Said vinyl polymer with the crosslinkable silyl group has a molecular weight distribution of less than 1.8. This anticipates claim 22. Said vinyl polymer can be synthesized by various methods, such as radical polymerization both ordinary radiation and controlled radical. Wherein controlled can be either chain transfer agent method or living radical polymerization method. Said living radical polymerization can be done by using cobalt-porphyrin complexes or an atom transfer radical polymerization method using organic halides as initiators and transition metal complexes as catalyst, such as copper, ruthenium, and nickel, wherein copper complexes are preferred—see column 6, lines 50-57. This anticipates claims 33-35. Wherein, Fujita et al teaches that the preferred living radical polymerization method is “atom transfer radical polymerization”(ATRP) method. Said ATRP method and living polymerization methods are explained in columns 6-11. These teachings appear to anticipate claims 31-32. Fujita et al teaches a plasticizer may be added to adjust the physical properties and viscosity—see column 17, lines 42-43, wherein chlorinated paraffin is disclosed, which is a mixture of solid hydrocarbons of high molecular weight, e.g.,  $\text{C}_{36}\text{H}_{74}$ . Said plasticizer can be added in amounts from 0 to 100 parts by weight per 100 parts by weight of the total amount of crosslinkable silyl-containing polymer—see column 17, line 55. Fujita et al does not expressly teach adding only high molecular weight plasticizers however, Fujita shows that high molecular weight plasticizers are known in the art to be used in combination with vinyl polymers having least one crosslinkable silyl groups represented by the formula  $-\text{Si}(\text{R}^1)_{2-b}(\text{Y})_{b0}]_m-\text{Si}(\text{R}^2)_{3-a}(\text{Y})_a$ . Therefore it would have been within the skill level of an ordinarily skilled artisan to use a high molecular weight plasticizer with a vinyl polymer having at least one crosslinkable silyl groups

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represented by the formula  $-\text{Si}(\text{R}^1)_{2-b}(\text{Y})_{bO}]_m-\text{Si}(\text{R}^2)_{3-a}(\text{Y})_a$ . The motivation would have been a reasonable expectation of adjusting the viscosity and other necessary physical properties as taught by Fujita et al, thus reading on claim 21.

The inventions of claims 21-25, 31-36 and 45 are anticipated by the reference.

7. Claims 21-25, 31-36 and 45 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Fujita et al (6,407,146 and US 2002/0086942).

Fujita et al teaches curable compositions comprises a vinyl polymer having at least one crosslinkable silyl groups represented by the formula  $-\text{Si}(\text{R}^1)_{2-b}(\text{Y})_{bO}]_m-\text{Si}(\text{R}^2)_{3-a}(\text{Y})_a$  and an epoxy resin or a polyether polymer having at least one crosslinkable silyl group. The vinyl polymer can be a methacrylic or acrylic polymer. This anticipates claims 23-24. Said vinyl polymer with the crosslinkable silyl group has a molecular weight distribution of less than 1.8. This anticipates claim 22. Said vinyl polymer can be synthesized by various methods, such as radical polymerization both ordinary radiation and controlled radical. Wherein controlled can be either chain transfer agent method or living radical polymerization method. Said living radical polymerization can be done by using cobalt-porphyrin complexes or an atom transfer radical polymerization method using organic halides as initiators and transition metal complexes as catalyst, such as copper, ruthenium, and nickel, wherein copper complexes are preferred—see column 6, lines 50-57. This anticipates claims 33-35. Wherein, Fujita et al teaches that the preferred living radical polymerization method is “atom transfer radical polymerization”(ATRP) method. Said ATRP method and living polymerization methods are explained in columns 6-11. These teachings appear to anticipate claims 31-32. Fujita et al teaches a plasticizer may be added to adjust the physical properties and viscosity—see column 17, lines 42-43, wherein chlorinated paraffin is disclosed, which is a mixture of solid hydrocarbons of high molecular weight, e.g.,  $\text{C}_{36}\text{H}_{74}$ . Said plasticizer can be added in amounts from 0 to 100 parts by weight per 100 parts by weight of the total amount of crosslinkable silyl-containing polymer—see column 17, line 55. Fujita et al does not expressly teach adding only high molecular weight plasticizers however, Fujita shows that high molecular weight plasticizers are known in the art to be used in combination with vinyl polymers having least one crosslinkable silyl

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groups represented by the formula  $-\text{Si}(\text{R}^1)_{2-b}(\text{Y})_{bO}]_m-\text{Si}(\text{R}^2)_{3-a}(\text{Y})_a$ . Therefore it would have been within the skill level of an ordinarily skilled artisan to use a high molecular weight plasticizer with a vinyl polymer having at least one crosslinkable silyl groups represented by the formula  $-\text{Si}(\text{R}^1)_{2-b}(\text{Y})_{bO}]_m-\text{Si}(\text{R}^2)_{3-a}(\text{Y})_a$ . The motivation would have been a reasonable expectation of adjusting the viscosity and other necessary physical properties as taught by Fujitita et al.

The inventions of claims 21-25, 31-36 and 45 are anticipated by the reference.

### *Allowable Subject Matter*

8. Claims 26-30 and 37-44 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter: the prior art fails to disclose a composition comprising (A) a vinyl polymer having at least one crosslinkable alkenyl, hydroxyl, epoxy or amino functional group and (D) a high molecular weight plasticizer having a number average molecular of 500 or over that is a vinyl or (meth) acrylic polymer having a molecular weight distribution value of less than 1.8 obtained by wither living polymerization of atom transfer polymerization techniques.

### *Conclusion*

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 6,552,118 Fujita et al teaches curable compositions comprises a vinyl polymer having at least one crosslinkable silyl groups represented by the formula  $-\text{Si}(\text{R}^1)_{2-b}(\text{Y})_{bO}]_m-\text{Si}(\text{R}^2)_{3-a}(\text{Y})_a$ .

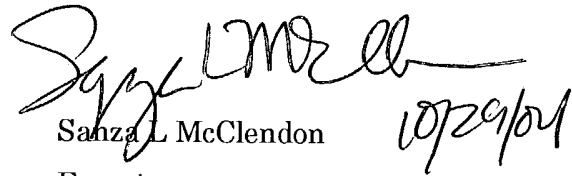
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sanza L McClendon whose telephone number is (571) 272-1074. The examiner can normally be reached on Monday through Friday 7:30-4:00.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571) 272-1078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sanza L. McClendon

Examiner

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